

## **What is claimed is:**

**(Claim 1)** An adjustable armrest system for a vehicle comprising:  
at least one armrest housing mounted within the vehicle and having an armrest surface;  
at least one piston element coupled to said at least one armrest surface;  
at least one piston-actuating device coupled to said at least one piston element; and  
a controller coupled to said at least one piston-actuating device and adjusting position of said at least one armrest surface.

**(Claim 2)** A system as in claim 1 wherein said at least one piston element comprises:

a first piston element; and  
a second piston element.

**(Claim 3)** A system as in claim 2 wherein said first piston element and said second piston element stabilize said at least one armrest surface in at least one direction selected from fore, aft, left, and right directions.

**(Claim 4)** A system as in claim 2 wherein said at least one piston element further comprises a third piston element, said first piston element, said second piston element, and said third piston element stabilizing said at least one armrest surface in fore, aft, left, and right directions.

**(Claim 5)** A system as in claim 1 wherein said at least one piston element independently adjust tilt of said at least one armrest surface.

**(Claim 6)** A system as in claim 1 wherein said at least one piston-actuating device comprises:

a first piston-actuating device associated with a first piston element; and  
a second piston-actuating device associated with a second piston element.

**(Claim 7)** A system as in claim 1 wherein said at least one piston-actuating device comprises at least one of an electrical motor, a fluidic actuating device, a pneumatic actuating device, and a hydraulic actuating device.

**(Claim 8)** A system as in claim 1 wherein at least one piston element comprises at least one fluid passage port.

**(Claim 9)** A system as in claim 8 wherein said at least one fluid passage port comprises:

an extension port; and  
a retraction port.

**(Claim 10)** A system as in claim 1 further comprising at least one valve coupled between said at least one piston element and said at least one piston-actuating device, said controller adjusting position of said at least one armrest surface via said at least one valve.

**(Claim 11)** A system as in claim 10 wherein said at least one valve is a sequential valve.

**(Claim 12)** A system as in claim 10 wherein said at least one valve comprises: a supply valve; and an evacuate valve.

**(Claim 13)** A system as in claim 12 wherein said supply valve and said evacuate valve are coupled to and allow passage of fluid to and from at least one chamber of said at least one piston element.

**(Claim 14)** A system as in claim 1 further comprising at least one spring element coupled to and assisting in the displacement of said at least one armrest surface and to said piston element.

**(Claim 15)** A system as in claim 1 further comprising an armrest position sensor generating a position signal indicative of position of said at least one armrest surface, said controller adjusting position of said at least one armrest surface in response to said position signal.

**(Claim 16)** An adjustable armrest system for a vehicle comprising:  
at least one armrest housing mounted within the vehicle and having an armrest surface;  
at least one fluid cell having a plurality of internal chambers coupled to said at least one armrest surface;  
a plurality of stabilizing members coupled to said at least one armrest surface;  
at least one pump coupled to said plurality of internal chambers; and  
a controller coupled to said at least one pump and adjusting position and orientation of at least a portion of said at least one armrest surface.

**(Claim 17)** A system as in claim 16 further comprising an armrest position sensor generating a position signal indicative of position of said at least one armrest surface, said controller adjusting position of said at least one armrest surface in response to said position signal.

**(Claim 18)** A system as in claim 16 wherein said plurality of stabilizing members comprise:  
a first stabilizing slider; and  
a second stabilizing slider positioned on a different side of said at least one fluid cell than said first stabilizing slider.

**(Claim 19)** A method of adjusting the position of a vehicle armrest comprising:

determining a current position of at least one armrest surface;  
determining a desired position of said at least one armrest surface; and  
adjusting position of said at least one armrest surface in response to said current position and said desired position comprising:  
actuating at least one piston element; and  
linearly translating at least one armrest surface stabilizing element other than said at least one piston element.

**(Claim 20)** A method as in claim 20 wherein actuating at least one piston element comprises passing at least one fluid in at least one flow direction relative to said at least one piston selected from a piston fill direction, a piston evacuate direction, a fluid return direction, and a fluid release direction.